elcometer® NDT

CG100 Series
Corrosion Thickness Gauges

CG100B, CG100BDL, CG100ABDL & CG100ABDL+

The most advanced in the Elcometer NDT range, these easy to use corrosion gauges provide inspectors with all the features necessary to accurately measure the material and coating thickness at the same time.

Offering a full range of measurement modes including: Pulse-Echo Temp Comp Mode (PETP) and Coating Only Mode (CT) to Pulse-Echo Coating Mode (PECT), the CG100 range allows the inspector to choose the right tool for the job.

Featuring automatic gain control (AGC) for ease of use or manual adjustment (-30dB to 70dB) to increase the amplitude of the received echo to suit the material properties, the CG100 series are ideal gauges for all applications.

The time corrected gain (TCG) feature automatically compensates for sound attenuation through a material, further increasing the performance of the gauge.

Built-in Gates allow users to set the measurement parameters either on or between waveforms, bypassing any surface echoes or noise from the material.

Threshold adjustment allows users to adjust the sensitivity of the gauge to detect signals with lower amplitudes.

The CG100BDL, CG100ABDL & CG100ABDL+ stores up to 16,000 readings with individual waveforms in alpha numeric batches with full data logging via RS232 data output to Elcometer NDT data management software.

With its high contrasting colour display the CG100ABDL+ has a refresh rate of 120Hz providing users with an instant measurement response.

Thickness Gauges

Advantages

- Range of display & measurement options: Pulse-Echo, Echo-Echo, Pulse-Echo Temp, Comp Mode (PETP), Coating Only Mode (CT), Pulse-Echo Coating Mode (PECT)
- Adjustable gain: -30dB to 70dB range
- Automatic gain control (AGC)
- Time corrected gain (TCG)
- Gate control
- Threshold adjustment
- 64 User defined setups
- Multiple language display
- Multiple calibration and material selection options
- High speed scan mode: 32 readings per second
- Differential and minimal thickness alarm modes
- Data storage capability: 16,000 readings and waveforms or B-Scans
- Download to Data management software

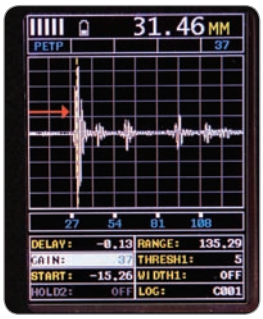
CG100B, CG100BDL, CG100ABDL & CG100ABDL+

Model & Part Number	CG100B	CG100BDL
Display Mode: **Material thickness digits display** **B-Scan cross sectional display** **Combined B-Scan and digits display** **Scan bar display** **Coating thickness display** **A-Scan display**	• • • • •	• • • • •
Measurement Mode[1]	PE, PETP (Temp Compensation), EE (ThruPaint™), EEV, CT (Coating) & PECT	PE, PETP (Temp Compensation), EE (ThruPaint™), EEV, CT (Coating) & PECT
Measurement Rate **Manual:** **Scan mode** **Scan bar display**	 4 readings per second 50 readings per second 6 readings per second	 4 readings per second 50 readings per second 6 readings per second
Measuring Range[2]	PE: 0.63 - 508mm (0.025 - 19.999 inches) PETP: 0.63 - 508mm (0.025 - 19.999 inches) EE: 2.54 - 102mm (0.100 - 4.000 inches) EEV: 1.27 - 25.4mm (0.050 - 1.000 inches) CT: 0.01 - 2.54mm (0.001 - 0.100 inches) **PE**CT: 0.63 - 508mm (0.025 - 19.999 inches) PE**CT**: 0.01 - 2.54mm (0.001 - 0.100 inches)	PE: 0.63 - 508mm (0.025 - 19.999 inches) PETP: 0.63 - 508mm (0.025 - 19.999 inches) EE: 2.54 - 102mm (0.100 - 4.000 inches) EEV: 1.27 - 25.4mm (0.050 - 1.000 inches) CT: 0.01 - 2.54mm (0.001 - 0.100 inches) **PE**CT: 0.63 - 508mm (0.025 - 19.999 inches) PE**CT**: 0.01 - 2.54mm (0.001 - 0.100 inches)
Measurement Accuracy[2]	±0.01mm (±0.001 inches)	±0.01mm (±0.001 inches)
Measurement Resolution	0.01mm (0.001 inches)	0.01mm (0.001 inches)
Velocity Calibration Range	1250 - 13,995m/s (0.0492 - 0.5510in/ms)	1250 - 13,995m/s (0.0492 - 0.5510in/ms)
Additional Features:[3] **High speed scan mode** **Differential mode** **Limit alarm mode**	 • • •	 • • •
B-Scan display speed	15 seconds per screen	15 seconds per screen
Flaw Mode		
Calibration Setups	6 factory & 64 user-definable setups transferrable to and from a PC archive	6 factory & 64 user-definable setups transferrable to and from a PC archive
Gates		
Damping		
Pulser Type	dual square wave pulsers up to 140Hz pulse repetition rate	dual square wave pulsers up to 140Hz pulse repetition rate
Gain	time corrected gain (TCG), automatic gain control (AGC) with 110dB range (limited), or selectable gain: vlow, low, medium hi or vhi	time corrected gain (TCG), automatic gain control (AGC) with 110dB range (limited), or selectable gain: vlow, low, medium hi or vhi
Timing	precision 25MHz TCXO with single shot 100MHz 8bit ultra low power 8 bit digitizer	precision 25MHz TCXO with single shot 100MHz 8bit ultra low power 8 bit digitizer

PE

Pulse - Echo Mode

The normal display mode, measures the total thickness from the base of the transducer probe to the material density boundary (typically the back wall). Ideal for pit and flaw detection.



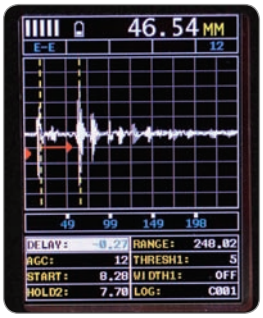
PETP

Pulse - Echo Temp Comp Mode

Similar to the PE mode, PETP takes into account and compensates for the variations in measurement caused by temperature variations.

Specifications

CG100ABDL	CG100ABDL+	Model & Part Number
• • • • • + Rectified, - Rectified, Full Waveform (RF)	• • • • • + Rectified, - Rectified, Full Waveform (RF)	**Display Mode:** **Material thickness digits display** **B-Scan cross sectional display** **Combined B-Scan and digits display** **Scan bar display** **Coating thickness display** **A-Scan display**
PE, PETP (Temp Compensation), EE (ThruPaint™), EEV, CT (Coating) & PECT	PE, PETP (Temp Compensation), EE (ThruPaint™), EEV, CT (Coating) & PECT	**Measurement Mode[1]**
4 readings per second 50 readings per second 6 readings per second	4 readings per second 32 readings per second 6 readings per second	**Measurement Rate** **Manual:** **Scan mode** **Scan bar display**
PE: 0.63 - 508mm (0.025 - 19.999 inches) PETP: 0.63 - 508mm (0.025 - 19.999 inches) EE: 1.27 - 102mm (0.050 - 4.000 inches) EEV: 1.27 - 25.4mm (0.050 - 1.000 inches) CT: 0.01 - 2.54mm (0.001 - 0.100 inches) **PE**CT: 0.63 - 508mm (0.025 - 19.999 inches) PE**CT**: 0.01 - 2.54mm (0.001 - 0.100 inches)	PE: 0.63 - 508mm (0.025 - 19.999 inches) PETP: 0.63 - 508mm (0.025 - 19.999 inches) EE: 1.27 - 102mm (0.050 - 4.000 inches) EEV: 1.27 - 25.4mm (0.050 - 1.000 inches) CT: 0.01 - 2.54mm (0.001 - 0.100 inches) **PE**CT: 0.63 - 508mm (0.025 - 19.999 inches) PE**CT**: 0.01 - 2.54mm (0.001 - 0.100 inches)	**Measuring Range[2]**
±0.01mm (±0.001 inches)	±0.01mm (±0.001 inches)	**Measurement Accuracy[2]**
0.01mm (0.001 inches)	0.01mm (0.001 inches)	**Measurement Resolution**
1250 - 13,995m/s (0.0492 - 0.5510in/ms)	1250 - 9,999m/s (0.0492 - 0.3936in/ms)	**Velocity Calibration Range**
• • •	• • •	**Additional Features:[3]** **High speed scan mode** **Differential mode** **Limit alarm mode**
adjustable display speed	adjustable display speed	**B-Scan display speed**
Basic prove-up flaw detection using single element angle beam transducers	Basic prove-up flaw detection using single element angle beam transducers	**Flaw Mode**
6 factory & 64 user-definable setups transferrable to and from a PC archive	6 factory & 64 user-definable setups transferrable to and from a PC archive	**Calibration Setups**
3 fully adjustable gates: start, stop, width & threshold	3 fully adjustable gates: start, stop, width & threshold	**Gates**
	adjustable; impedance matching for optimising transducer performance	**Damping**
dual 200 volt square wave pulsers with adjustable pulse width (spike, thin, wide) and 50 volt cut/boost for greater penetration	dual 200 volt square wave pulsers with adjustable pulse width (spike, thin, wide) and 50 volt cut/boost for greater penetration	**Pulser Type**
manual, automatic gain control (AGC) with 110dB range (limited), time corrected gain (TCG)	manual, automatic gain control (AGC) with 110dB range (limited), time corrected gain (TCG)	**Gain**
precision 25MHz TCXO with single shot 100MHz 8bit ultra low power 8 bit digitizer	precision 25MHz TCXO with single shot 100MHz 8bit ultra low power 8 bit digitizer	**Timing**



EE

Echo - Echo Mode

Also known as the ThruPaint™ Mode, EE ignores the coating thickness, displaying the material thickness from the top surface of the material to the material density boundary.

EEV

Echo - Echo Verify Mode

The echo-echo verify mode measures by comparing the values between 3 reflections and is commonly used to eliminate errors from surface coatings and to make measurements in multiple layered materials.

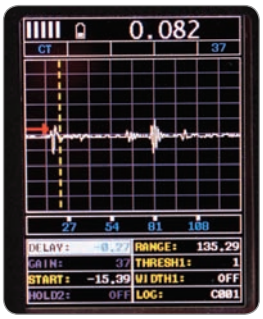
[1] PE: Pulse-Echo Mode, PETP: Pulse-Echo Temperature Compensation Mode, EE: Echo-Echo (ThruPaint™) Mode, EEV: Echo-Echo Verify, CT: Coating Thickness Mode, PECT: Pulse-Echo, Coating Thickness Mode; See page 3 for further information

[2] Measuring range & accuracy depends on material, surface conditions and the transducer selected

[3] See page 5 for a full explanation of the features

CG100B, CG100BDL, CG100ABDL & CG100ABDL+

Model & Part Number	CG100B	CG100BDL
Data logging		• 16,000 with B-scan image & gauge settings • 210,000 - coating, material, min, max thickness • sequential and grid logging • Alpha numeric batch identification • OBSTRUCT indicates inaccessible locations
Calibration Options	single, two point, velocity & material type	single, two point, velocity & material type
Transducer Probe Type	dual element	dual element
Transducer Frequency Range	1 - 10MHz	1 - 10MHz
Transducer Recognition	automatic & manual - selectable from a list	automatic & manual - selectable from a list
V-path / dual path error correction	automatic	automatic
Probe Zero	automatic & manual (via integrated probe disk)	automatic & manual (via integrated probe disk)
Display	1/8 VGA (grayscale) 62 x 45.7mm (2.4 x 1.8 inches) viewable area	1/8 VGA (grayscale) 62 x 45.7mm (2.4 x 1.8 inches) viewable area
Display Refresh Rate	25Hz	25Hz
Units (selectable)	mm or inches	mm or inches
Backlight	on / off / auto	on / off / auto
Repeatability / Stability Indicator	•	•
Battery Type	3 x AA alkaline	3 x AA alkaline
Battery Life (approximate)	150 hours	150 hours
Low Battery Indicator	•	•
Battery Save Mode	auto	auto
Operating Temperature	-10 to 60ºC (14 to 140ºF)	-10 to 60ºC (14 to 140ºF)
Size (w x h x d)	63.5 x 165.0 x 31.5mm (2.5 x 6.5 x 1.24 inches)	63.5 x 165.0 x 31.5mm (2.5 x 6.5 x 1.24 inches)
Weight (including batteries)	383g (13.5oz)	383g (13.5oz)
Aluminium case design with gasket sealed end caps, waterproof membrane keypad	•	•
Transducer Connector Type	LEMO	LEMO
RS232 Interface	Bi-directional	Bi-directional
Packing List	Elcometer NDT CG100B gauge, couplant, carry case, user manual, test certificate, 3 x AA batteries	Elcometer NDT CG100BDL gauge, couplant, carry case, user manual, test certificate, 3 x AA batteries, software, transfer cable

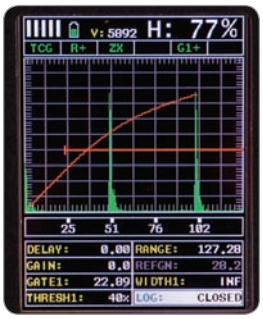


CT
Coating Only Mode
Displays the thickness of the coating applied to the material.

PECT
Pulse - Echo Coating Mode
Displays both the material thickness (PE) and the coating thickness (CT) at the same time.

Specifications (continued)

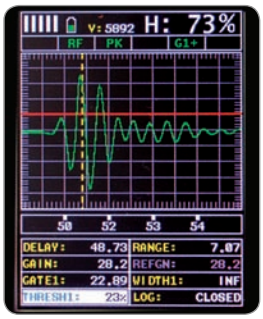
CG100ABDL	CG100ABDL+	Model & Part Number
• 16,000 with A/B-scan image & gauge settings • 210,000 - coating, material, min, max thickness • sequential and grid logging • Alpha numeric batch identification • OBSTRUCT indicates inaccessible locations	• 8,000 with A/B-scan image & gauge settings • 210,000 - coating, material, min, max thickness • sequential and grid logging • Alpha numeric batch identification • OBSTRUCT indicates inaccessible locations	**Data logging**
single, two point, velocity & material type	single, two point, velocity & material type	**Calibration Options**
dual element & flaw prove up	dual element & flaw prove up	**Transducer Probe Type**
1 - 10MHz	1 - 10MHz	**Transducer Frequency Range**
automatic & manual - selectable from a list	automatic & manual - selectable from a list	**Transducer Recognition**
automatic	automatic	**V-path / dual path error correction**
automatic & manual (via integrated probe disk)	automatic & manual (via integrated probe disk)	**Probe Zero**
1/8 VGA (grayscale) 62 x 45.7mm (2.4 x 1.8 inches) viewable area	1/4 VGA AMOLED colour display 57.6 x 43.2mm (2.27 x 1.78 inches) viewable area	**Display**
25Hz	120Hz	**Display Refresh Rate**
mm or inches	mm or inches	**Units (selectable)**
on / off / auto	adjustable brightness	**Backlight**
•	•	**Repeatability / Stability Indicator**
3 x AA alkaline	3 x AA alkaline	**Battery Type**
50 hours	25 hours	**Battery Life (approximate)**
•	•	**Low Battery Indicator**
auto	auto	**Battery Save Mode**
-10 to 60ºC (14 to 140ºF)	-10 to 60ºC (14 to 140ºF)	**Operating Temperature**
63.5 x 165.0 x 31.5mm (2.5 x 6.5 x 1.24 inches)	63.5 x 165.0 x 31.5mm (2.5 x 6.5 x 1.24 inches)	**Size (w x h x d)**
383g (13.5oz)	383g (13.5oz)	**Weight (including batteries)**
•	•	**Aluminium case design with gasket sealed end caps, waterproof membrane keypad**
LEMO	LEMO	**Transducer Connector Type**
Bi-directional	Bi-directional	**RS232 Interface**
Elcometer NDT CG100ABDL gauge, couplant, carry case, user manual, test certificate, 3 x AA batteries, software, transfer cable	Elcometer NDT CG100ABDL+ gauge, couplant, carry case, user manual, test certificate, 3 x AA batteries, software, transfer cable	**Packing List**



TCG

Time Corrected Gain

Time corrected gain increases gain as time increases, in order to achieve an over all level of sensitivity for the same flaw/reflector at different distances.



FLAW MODE

Basic Flaw Mode

Basic prove-up flaw detection using single element angle beam transducers is available on the CG100ABDL and CG100ABDL+ corrosion thickness gauges.

[1] PE: Pulse-Echo Mode, PETP: Pulse-Echo Temperature Compensation Mode, EE: Echo-Echo (ThruPaint™) Mode, EEV: Echo-Echo Verify, CT: Coating Thickness Mode, PECT: Pulse-Echo, Coating Thickness Mode; See page 3 for further information

[2] Measuring range & accuracy depends on material, surface conditions and the transducer selected

[3] See page 5 for a full explanation of the features

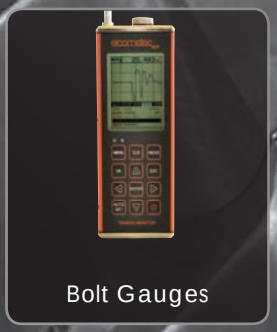
Corrosion Gauges

Precision Gauges

Flaw Detection

Velocity Gauges

Sonic Gauges



Bolt Gauges

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